

syngenta

Callisto[™]
HERBICIDE



Inspired by nature

Callisto is currently under review by the Pest Management Regulatory Agency and not yet registered for use in Canada.



Inspired by nature

Callisto™ is a new, unique class of chemistry. Research shows it delivers excellent broadleaf weed control for corn with superior crop safety and exceptional application flexibility. It's a combination that helps you achieve your crop's maximum yield potential.

Native to the woodlands of southeastern Australia, the Callistemon citrinus tree has evolved a natural defence against the weeds that would compete with it for scarce moisture and nutrients. It is this natural weed control system that has been harnessed and refined by Syngenta scientists and put into Callisto—a novel herbicide for modern corn production.

This journey from the discovery of the amazing weed control properties of the Callistemon citrinus tree to a commercially viable herbicide began in California in 1977. That year, a Syngenta scientist was in his backyard admiring the blooms on his ornamental Callistemon citrinus tree – the same one that grows wild in Australia – and noticed there were no weeds growing near the tree. There was something about the Callistemon tree that was eliminating weeds around it.

From natural compound to refined herbicide

Biologists had already known about natural herbicides (called allelopathic compounds) that are secreted by some plants. Unfortunately, these allelopathic compounds tend to be hard to reproduce for agricultural use.

Syngenta scientists isolated a chemical exuded from the Callistemon tree called leptospermone that proved to be very effective against a wide range of broadleaf weeds.

The team then tweaked and improved leptospermone, creating a molecule called mesotrione which is 50 times more active than leptospermone. Mesotrione is now the active ingredient in Callisto.



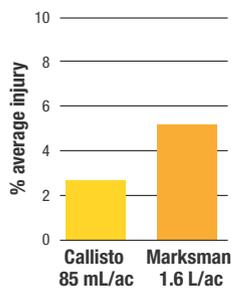
Superior crop safety

Research results from trial plots and on-farm research permit testing in Canada confirm the crop safety of Callisto. This is a new level of crop safety and is a significant improvement over commonly used broadleaf herbicides. (See Tables 4 & 5.)

Based on an outstanding crop safety profile, weed scientists in Canada are evaluating Callisto for use in seed corn and sweet corn, where sensitive hybrids and in-breds are vulnerable to many current broadleaf herbicides. According to recent research, Callisto has the potential to virtually eliminate the worry of crop injury while also providing excellent weed control. This may give even sweet and seed corn growers an exciting new option for their valuable crops.

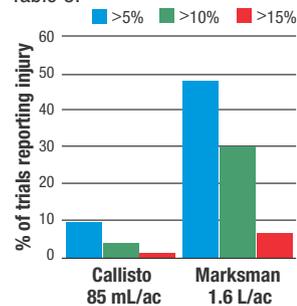
More Consistent Crop Safety

Table 4.



Callisto global research

Table 5.



Excellent broadleaf weed control

Callisto is a broad spectrum herbicide that controls key broadleaf weed species, including triazine and ALS tolerant biotypes, in corn. Callisto sprayed in research permit trials from pre-emergent all the way through to late post demonstrated excellent broadleaf control of weeds including velvetleaf, lamb's-quarters and pigweed. (See Table 1, 2 and 3.)

Convenient one-pass control

Research is being conducted on a variety of tank-mix options for true one-pass, season-long weed control. Among tank-mix partners, Primextra[®] II Magnum[®] in particular, is showing to be an excellent tank-mix partner with Callisto. This combination will provide an opportunity to get weed control in place before the 3rd-leaf start of the critical weed-free period, earning growers a yield benefit, increased dependability and reduced risk.

Callisto is also being tested with Ultim[®] and Accent[®] herbicides for one-pass convenience in post-emergent situations.

AAtrex[®] improves both the speed and the overall effectiveness of weed control. In the United States, where Callisto has been registered since 2001, Callisto is always recommended with AAtrex. This combination provides true synergy where the results from the tank-mix are better than the separate results for the two herbicides. In Canadian trials, combinations with a quarter litre of AAtrex per acre are enhancing Callisto's weed spectrum

and extending its dependability. (See Table 6.)

Table 1. Callisto vs Converge

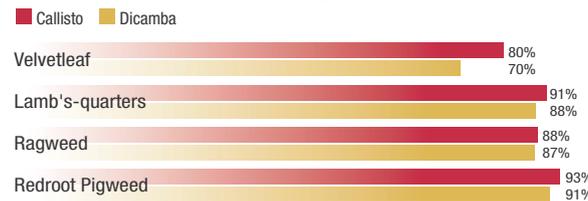
Weed control 70 days after pre-emergent application



*8 Canadian on-farm comparisons in 2003 with Callisto plus AAtrex program compared against the grower's standard Converge[®] program

Table 2. Callisto vs Dicamba

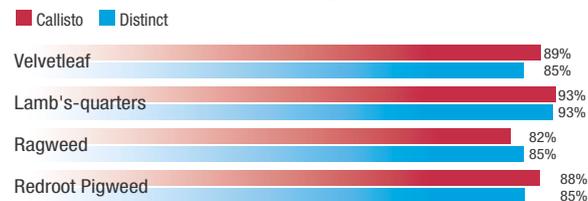
Weed control 70 days after pre-emergent application



*24 Canadian on-farm comparisons in 2003 with Callisto plus AAtrex program compared against the grower's standard Marksman[®] or Banvel[®] program

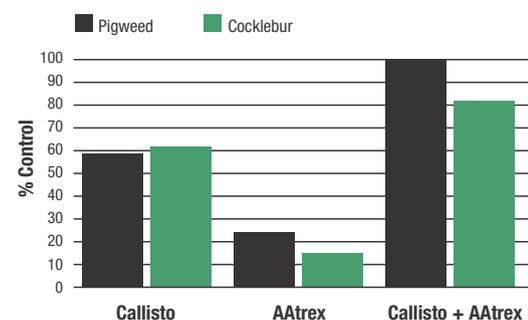
Table 3. Callisto vs Distinct

Weed control 49 days after post-emergent application



*6 Canadian on-farm comparisons in 2003 with Callisto plus AAtrex program compared against the grower's standard Distinct[®] program

Table 6. Callisto Synergy with AAtrex



Flexibility to fit today's farm

Because Callisto can take multiple paths into weeds, it shows maximum application flexibility in research trials. Application can be either pre- or post-emergence resulting in an extremely wide application window.

When soil-applied, Callisto is rapidly absorbed by weed seeds, shoots and roots. When applied post emergently, foliar uptake of Callisto is very rapid. Up to 88 percent of its active ingredient is absorbed within three hours. In all application timings, Callisto provides effective soil activity and residual control.



Callisto post-emerge vs. check

Mesotrione biokinetics

Uptake, translocation and metabolism

The application flexibility of Callisto is a result of the many pathways mesotrione can take to get inside a weed plant.

Once inside, Callisto is systemic, moving both upward and down, translocated acropetally in the xylem and basipetally in the phloem. In radio-labelled mesotrione experiments, up to 70 percent is translocated out of the treated zone within 24 hours of treatment.



Unique mode of action

Callisto belongs to an entirely new class of chemistry called triketones. Callisto's active ingredient, mesotrione, inhibits the HPPD enzyme (p-hydroxyphenyl pyruvate dioxygenase) making it a Group 28 herbicide. Inside broadleaf weeds, the mesotrione acts to inhibit the HPPD enzyme causing a disruption of pigment (carotenoid) synthesis. The result is that the weed quickly stops growing, bleaches and then dies.

Adding to Callisto's flexibility is the fact that triazine and ALS-resistant weeds are susceptible to mesotrione. Furthermore, there is a very low risk of resistance developing compared to triazine and ALS.

Low volatility

Callisto's low volatility rating is especially good news for corn producers with neighbours growing sensitive crops such as grapes – current options where volatility is a concern are limited.



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For more information about Callisto or any of our products, please call our Customer Resource Centre:

1-87-SYNGENTA (1-877-964-3682)

www.farmassist.ca

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